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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,193	07/15/2003	Stephen J. Kramer	108298389US1	2351

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EXAMINER

ELEY, TIMOTHY V

ART UNIT

PAPER NUMBER

3724

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

6

Office Action Summary	Application No. 10/621,193	Applicant(s) KRAMER ET AL.	
	Examiner Timothy V. Eley	Art Unit 3724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 21-31, 33, 34, 49-60, 72-75 and 78-87 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-19, 21-31, 33, 34, 49-56, 58-60, 72-75 and 78-87 is/are rejected.
- 7) ☒ Claim(s) 9 and 57 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1,3,4,6,11,12,15-17,19,23,28,29,31,49,50,56,58,72-74,78,82,83,85, and 87 are rejected under 35 U.S.C. 102(a) as being anticipated by Cook et al(6,036,579) et al.

- Cook et al disclose a method for forming a planarizing pad for planarizing a microelectronic substrate, comprising; selectively exposing a first portion of a surface of an energy-sensitive planarizing pad material to a selected energy source without exposing a second portion of the surface facing in generally the same direction as the first portion and adjacent to the first portion, the energy-sensitive planarizing pad material including fixed abrasive elements for abrading the microelectronic substrate; and forming a plurality of recesses and contact surfaces at the surface of the planarizing configured to support a planarizing liquid proximate to the surface of the planarizing pad material during planarization of the microelectronic substrate by exposing the planarizing pad material to a solvent to remove material from one of the first and second portions of

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the planarizing pad at a greater rate than removing material from the other of the first and second portions. See figures 1,2, and 5a-5d; column 1, lines 12-24, column 2, lines 45-56, column 3, lines 54-end to column 4, lines 1-9, column 5, lines 45-end to column 6, lines 1-5, column 30, lines 30-36, and column 6, lines 58-61.

- Regarding claim 3, a second surface of planarizing pad material is exposed to the selected energy source to change the solubility of the planarizing pad material to a selected depth beneath the second surface. See figure 1.
- Regarding claim 4, the first portion of the surface of the planarizing pad material is selected to include a plurality of uniformly spaced regions. See figure 1.
- Regarding claim 6, the second surface of the planarizing pad material is attached to a substrate material to support the planarizing pad material. See column 4, lines 9-15.
- Regarding claims 11,28, and 58, the planarizing material is cured at an elevated temperature to inherently strengthen and harden the planarizing pad material. See column 5, lines 58-61.
- Regarding claim 12, the selected energy source is ultraviolet radiation. See column 5, lines 49-54.
- Regarding claim 15, the planarizing pad material is selected to have a generally circular planform shape. See column 3, lines 2 and 3.

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- Regarding claims 16, and 23, a mask(18) is used. See figure 1.
- Regarding claim 17, the planarizing pad material includes a photopolymer. See column 1, lines 65-end to column 2, lines 1-23.
- Regarding claims 19,31, and 83, inherently the solubility of the first portion of the planarizing pad material is decreased when exposed to the selected energy source, since the first portion is cured when exposed.
- Regarding claim 29, the rear surface of the planarizing pad material is irradiated with ultraviolet radiation. See column 6, lines 27-29.
- Regarding claim 50, the abrasive elements are alumina. See column 2, lines 53 and 54.
- Regarding claim 56, the second surface of the planarizing pad material is cured to a selected depth beneath the second surface by the radiation source 26.
- Regarding claim 73, inherently the second surface of the planarizing pad material is irradiated to an intermediate depth between the first and second surfaces by the radiation source 26.
- Regarding claim 74, recesses are formed which are configured to support a planarizing liquid proximate to the planarizing surface of a non-sacrificial layer during planarization of the microelectronic substrate. See column 5, lines 63-end.

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- Regarding claims 78,82, and 85, Cook et al teaches a planarizing pad made by the process as recited by applicant.
- Regarding claim 87, the photodish functions as the partially transmissive substrate material. See column 3, lines 9-12.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2,5,7,8,10,13,14,18,21,22,24-27,30,33,34,51-55,59,60,75,79-81,84, and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al.

- Cook et al is explained above.
- Regarding claims 2,24,55,79, and 86, Cook et al does not disclose the exact thickness of the planarizing pad material and the exact depth of the recesses in the surface of the planarizing pad(claim 2). However, Cook et al discloses the planarizing pad material is about 0.5 to 5mm(about .02 inches), and therefore teaches manufacturing extremely thin planarizing pads. Therefore, the exact size of the planarizing pad material and recesses would have been obvious matters of design choice to one having ordinary skill in the art, since clearly the process disclosed by Cook et al can be applied to a thinner planarizing pad material.

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- Regarding claim 5, Cook et al, does not disclose that the first portion of the surface of the planarizing pad material is selected to include a plurality of randomly spaced regions. However, Cook et al discloses that the three dimensional pattern can be any configuration, such as a . . . groove . . . or any other geometric configuration(column 2, last 2 lines to column 4, line 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide randomly spaced regions since such would depend upon the preference of the user, and since Cook et al suggests that any desirable configuration may be used.
- Regarding claims 7,8,26, and 27, Cook et al does not disclose that the substrate material is polyester nor the exact thickness of the substrate material recited by applicant. However, Cook et al discloses that the substrate material is preferably formed from elastomeric material such as elastomeric urethane foam or the like(column 4, lines 13-16). Therefore, to use polyester as the backing material would have been an obvious matter of choice and structural design to one having ordinary skill in the art at the time the invention was made, since polyester is a type of elastomeric material which could be interchangeable with urethane foam. To make the backing extremely thin would have been obvious to one having ordinary skill in the art since the pad itself is thin and the backing should be consistent therewith.

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- Regarding claim 10, Cook et al disclose a protective film⁽¹⁸⁾ adjacent to the surface of the planarizing pad material, but does not specifically disclose removing the film after exposing the planarizing pad material to the energy source and before exposing the planarizing pad material to the solvent. However, exactly when the protective film is removed would have been an obvious matter of choice, since clearly the protective material is used to protect a portion of the surface from the energy source and may be removed at any time after the energy source is no longer being used, so long as a desired pattern is produced on the surface of the planarizing pad.
- Regarding claim 13, Cook et al does not disclose that the solvent is either nonyl acetate or benzyl alcohol. However, Cook et al discloses that the solvent should be capable of removing material in order to create a desired pattern(column 3, lines 60-65). Therefore, the exact type of solvent used to remove material would have been obvious to one having ordinary skill in the art, since Cook et al teaches that any solvent capable of removing material in order to product a desired pattern may be used.
- Regarding claims 14,22,30,33,59,81, and 84, Cook et al discloses that the planarizing material may be a roll(column 3, line 3); however, Cook et al does not disclose that the planarizing pad material is attached to an elongated substrate material and that the processing of the planarizing pad material is performed continuously. To use and elongated substrate material and to

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process the planarizing pad material continuously would have been obvious to one having ordinary skill in the art since such would save time in producing a finished product.

- Regarding claims 18, and 60, Cook et al do not disclose increasing a solubility of the first portion of the planarizing pad material by exposing it to the selected energy source.

However, Cook et al discloses decreasing the solubility of the first portion by exposing it to the selected energy source, in order to allow recesses to be made by removing the material next to the first portion. Therefore, whether the solubility of the first portion of the planarizing pad material is increased or decreased by the selected energy source would have been obvious to one having ordinary skill in the art as long as either the first portion or the material adjacent to it may be removed in order to create the recesses in the surface of the planarizing pad material.

- Regarding claim 21, Cook et al does not disclose the exact Shore D hardness of the planarizing surface material as recited by applicant. However, Cook et al discloses that the Shore D hardness may be 40 or 44 as a particular advantage, but does not exclude the possibility of the Shore D hardness being greater than 44 (column 5, lines 3 and 4; column 6, lines 1 and 2).

Therefore, the exact Shore D hardness of the planarizing surface material would have been an obvious matter of choice since clearly the selected energy sources disclosed by Cook et al are

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capable of processing materials having Shore D hardness greater than 50.

- Regarding claims 25 and 80, Cook et al does not specifically disclose that the substrate material is at least partially transparent to the selected radiation. However, whether or not the substrate material is at least partially transparent to the selected radiation would have been an obvious matter of design choice, since radiation is not necessarily transmitted through the substrate material (even in claim 80 since the selecting and attaching steps may occur before the exposing step).
- Regarding claim 34, Cook et al does not specifically disclose the time of exposing the rear surface of the planarizing pad material to produce the exact depth of changing of the solubility of the planarizing pad material as recited by applicant. However, the exact time of exposing the rear surface to produce a particular depth of changing of the solubility of the planarizing pad material would have been an obvious matter of choice since clearly the time should be sufficient to allow for production of the recesses to the depth required.
- Regarding claims 51-54, Cook et al does not specifically disclose the added ingredients recited by applicant. However, to add the addition ingredients recited by applicant to the planarizing pad material would have been obvious matters of choice and structural design, since the examiner takes Official Notice that chalk, graphite, and amorphous carbon material are well-known

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ingredients in planarizing pads used for planarizing microelectronic substrate, whereby properties of the planarizing pads are enhanced.

Allowable Subject Matter

5. Claims 9 and 57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

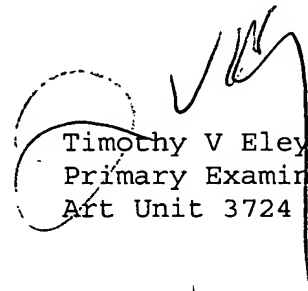
Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy V. Eley whose telephone number is 571-272-4506. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Allan N. Shoap can be reached on 571-272-4514. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Timothy V Eley
Primary Examiner
Art Unit 3724

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